

REMARKS

Reconsideration of the application, as amended, is respectfully requested.

I. STATUS OF CLAIMS

Claims 1-19 are pending in this application. Claims 1 and 13 have been amended to further clarify that the thermal barrier coating system is completely removed during step b) of the method recited in these claims. Claim 19 has been amended to further clarify that the thermal barrier coating system is completely removed during step c) of the method recited in this claim.

It is respectfully submitted that no new matter has been added by virtue of this amendment. Support for the above amendments may be found throughout the specification as originally filed. In particular, support for the amendments made to claims 1, 13 and 19 may be found on page 11, lines 25-31 of the present specification.

II. OBVIOUSNESS DOUBLE PATENTING

Claims 1-4, 7-8 and 11 were provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claim 1-4, 7-8 and 11 of commonly owned co-pending U.S. Patent Application Serial No. 10/714,430.

Applicants acknowledge that the above rejection is a provisional rejection as neither application has yet issued into a patent.

III. 35 U.S.C. 112, SECOND PARAGRAPH REJECTION

Claim 12 was rejected under 35 U.S.C. 112, second paragraph, as being indefinite on the grounds that it is unclear what the term "M" is required to be in the claim.

In response, Applicants respectfully assert that the expression "MCrAlY bond coating" recited in claim 12 is a well known expression in the bond coating art. Moreover, examples of certain chemical materials which may represent M in the formula MCrAlY are expressly set forth on page 2, lines 4-7 of the present specification. Accordingly, one skilled in the art viewing the entire specification, in conjunction with the available knowledge in the bond coating art, would understand the full scope of claim 12 and the possible chemical materials which could represent the "M" portion of the MCrAlY bond coating.

IV. 35 U.S.C. 103(a) REJECTIONS

The Examiner rejected claims 1-19 under 35 U.S.C. 103 as being unpatentable over U.S. Patent No. 5,972,424 to Draghi et al ("the Draghi patent") in view of U.S. Patent No. 6,049,978 to Arnold ("the Arnold patent") and U.S. Patent No. 6,074,706 to Beverley et al. ("the Beverley patent").

Initially, as noted above, claims 1 and 13 have been amended to further clarify that the thermal barrier coating system is completely removed during step b) of the method recited in these claims. Claim 19 has been amended to further clarify that the thermal barrier coating system is completely removed during step c) of the method recited in this claim.

It is respectfully asserted that the above proposed combination fails to teach or suggest all of the limitations recited in amended independent claims 1, 13 and 19. At the very least, the above proposed combination fails to teach or suggest providing a method for repairing coated components, exposed to engine operation wherein the thermal barrier coating system, comprising a bond coat and top ceramic thermal barrier coating is completely removed from the component during the repair process, as recited in step b) of amended claims 1 and 13 and step c) of amended claim 19.

In the Office Action, The Draghi patent was cited by the Examiner as teaching all of the features of the presently claimed invention except for the precise thickness of the reapplied coatings, the restored conditions, the weighing, the bond coating thickness and Δt , superalloy features and densities. The Arnold and Beverley patents were cited in an attempt to cure the above deficiencies of the Draghi patent. In particular, the Arnold patent was cited by the

Examiner for teaching the importance of performing inspections and measurements to determine how much coating material needs to be applied to the substrate to achieve the desired post repair dimensions. The Beverley patent was cited by the Examiner for showing that it is desired for bond coats to be applied in a narrow range of thicknesses but that the top coat may be applied at a variety of different thicknesses.

However, the Draghi patent besides those deficiencies mentioned above by the Examiner, also fails to teach or suggest providing a method for repairing coated components, exposed to engine operation wherein the thermal barrier coating system, comprising a bond coat and top ceramic thermal barrier coating is completely removed from the component during the repair process, as recited in step b) of amended claims 1 and 13 and step c) of amended claim 19. Instead, the Draghi patent teaches away from processes which completely remove the thermal barrier coating system, including the bond coat from a component which is to be repaired.

In particular, the Draghi patent teaches that in its method only the ceramic top coat 16 and the aluminum oxide layer 14 of its thermal barrier coating system 10 should be removed from the engine run gas turbine engine component, but that the original bond coat 12 should not be removed from the component or at the very least a sufficient amount of the original bond coat 12, e.g. about 1 mils of the original bond coat, must not be removed from the component, in order to be able to practice its invention. Next, the Draghi patent teaches that after the removal of the ceramic top coat 16 and aluminum oxide layer 14 during its repair process, a flash coat is then applied over the original bond coat 12 on the gas turbine component, followed by application of both a new aluminum oxide layer and a new ceramic top coat over the flash coat.

Applicants wish to point out that the Draghi patent clearly indicates the critical importance of not removing the entire original bond coat 12 from the gas turbine engine component in practicing its invention, by expressly stating in its patent that if there is insufficient original bond coat 12 left on the gas turbine engine component after removal of the ceramic top coat 16 and the aluminum oxide layer 14 that its method cannot be used in repairing the component. (See Col. 4, lines 24-28 of the Draghi patent)

Moreover, the Draghi patent further mentions in the background section of its patent that

there are several specific drawbacks in removing the entire thermal barrier coating system, including the bond coat from a gas turbine engine component during a repair process. (See Col.2, lines, 16-20 of the Draghi patent). In particular, Draghi patent states that by removing and reapplying a metallic bond coat of a thermal barrier coating system to and from a component during a repair process, the following drawbacks can result: (i) a problem known as “coat down”, (ii) a repair process that is expensive and time consuming and (iii) a repair process that generates waste material or by products that require costly disposal. (See Col.2, lines, 20-33 of the Draghi patent).

As can be gleaned from the above, the Draghi patent clearly teaches away from completely removing the thermal barrier coating system from a gas turbine engine component during its repair process. Consequently, one skilled in the art using the discussed teaching of the primary reference (i.e. the Draghi patent) in combination with the Arnold and the Beverley patents as proposed in above rejection, would arrive at a method of repairing a coated gas turbine engine component, which required that at least about 1 mils of the original bond coat not be removed from the component throughout the whole repair process. Thus, this proposed combination would at the very least fail to teach or suggest providing a method for repairing coated components, exposed to engine operation wherein the thermal barrier coating system, comprising a bond coat and top ceramic thermal barrier coating is completely removed from the component during the repair process, as recited in step b) of amended claims 1 and 13 and step c) of amended claim 19.

Additional support for the assertion of nonobviousness of the presently claimed invention as recited in amended claim 1, 13 and 19 over the above proposed combination of Draghi, Arnold and Beverley patents may also be found on page 14, lines 18-23 of the present specification which mentions how the presently claimed invention produces surprising results which are in contrast to prior teachings.

For all of the reasons set forth above, withdrawal of the above rejection to claim 1, 13 and 19 is therefore respectfully requested. As claims 2-12 depend from and incorporate all of the limitations of claim 1 and claims 14-18 depend from and incorporate all of the limitations of claim 13, the withdrawal of the rejection to these dependent claims is likewise respectfully requested.

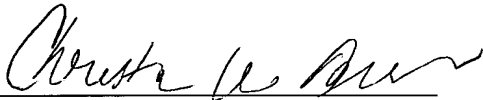
V. CONCLUSION

In view of the foregoing, it is believed that all pending claims as currently presented are in condition for allowance. A notice of allowance is respectfully requested.

According to currently recommended Patent Office policy, the Examiner is requested to contact the undersigned at the telephone number provided below in the event that a telephone interview will advance the prosecution of this application. An early and favorable action is earnestly solicited.

No fees are believed due with this amendment. However, should the undersigned attorney be mistaken regarding whether any fees are due, then please adjust deposit account no.: 50-1924, accordingly.

Respectfully submitted,



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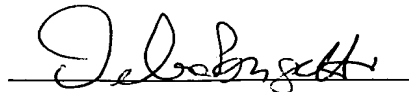
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Signature of Person Making Deposit

IN THE DRAWINGS:

Please replace sheet 1 of 2 with the attached Replacement Sheet. This Replacement Sheet corrects a typographical error with respect to reference numeral 18. In Fig. 1, reference numeral 18 for the cooling holes is corrected to 18', as reference 18 refers to the thermal barrier coating system (see Fig. 2).